

WHAT IS CLAIMED IS:

1. ~~An apparatus for increasing a digital camera image capture rate,~~
comprising:
an imaging device for capturing an image in response to an image
capture request;
a memory device coupled to the imaging device for storing said image
and for storing routines that process the image, including
first routines for transferring the image between different
locations within the memory device to provide space
for storing additional, subsequently captured images,
second routines for processing and compressing said
image, and
third routines for prioritizing the order in which the first
and second routines are executed; and
a central processing unit coupled to the memory device for executing
~~the first, second and third routines.~~

1 ~~2. The apparatus of claim 1, wherein:~~
2 the memory device is comprised of a RAM and a ROM;
3 the RAM is comprised of a frame buffer and a RAM disk;
4 the ROM is comprised of a control application process, a spooler
5 process and an image processing/compression process;
6 the control application process commands the imaging device to
7 capture the image and place it in the frame buffer;
8 the spooler process, having the highest priority for execution by the
9 central processing unit, transfers the image from the frame
10 buffer to the RAM disk; and
11 ~~the image processing/compression process transforms the image.~~

1 ^{sub} 2. 3. A method for increasing a digital camera image capture rate,
2 comprising the steps of:
3 capturing an image upon detecting an image capture request;
4 storing the image in a memory device;
5 repeating the capturing and storing steps if another image capture
6 request is detected; and
7 performing image processing and compression on the image.

1 ~~4. The method of claim 3, the method further comprising the steps~~

2 of:

3 halting the image processing/compression step and returning to the

4 capturing step if another image capture request is detected; and

5 resuming the image processing/compression step after the capturing,

6 ~~storing and repeating steps have been performed.~~

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1 The method of claim 3 further comprising the steps of:

2 deleting the image before the storing step if an image deletion request

3 is detected; and

4 deleting the image before the image processing/compression step if

5 the image deletion request is detected.

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1 The method of claim 3 wherein:

2 the image is a raw image;

3 the capturing step further comprises the step of placing the raw image

4 in a frame buffer;

5 the memory device is comprised of a first memory device and a

6 second memory device, and

7 the storing step further comprises the steps of:

8 (a) skipping to step (e), if the first memory device does not have
9 room for another raw image;
10 (b) copying the raw image from the frame buffer to the first
11 memory device;
12 (c) deleting the raw image from the frame buffer;
13 (d) returning to said capturing step if another raw image
14 capture request is detected;
15 (e) skipping to the image processing and compression step if the
16 second memory device does not have room for another
17 raw image;
18 (f) copying the raw image from the first memory device to the
19 second memory device;
20 (g) halting step (f) and returning to step (a) if the image capture
21 request is detected;
22 (h) deleting the raw image from the first memory device; and
23 (i) returning to step (b) if another raw image can be moved from
24 the frame buffer to the first memory device.

1 H 7. The method of claim ³ 8, wherein the image processing and
2 compression step further comprises the steps of:
3 processing the raw image from the frame buffer if the raw image is
4 located in the frame buffer;
5 processing the raw image from the first memory device if the raw
6 image is located in the first memory device;
7 processing the raw image from the second memory device if the raw
8 image is located in the second memory device;
9 halting the image processing and compression step and returning to
10 said capturing step if the image capture request is detected;
11 halting the image processing and compression step and returning to
12 step (b) if at least one more raw image can be copied from the
13 frame buffer to the first memory device;
14 halting the image processing and compression step and returning to
15 step (f) if at least one more raw image can be copied from the
16 first memory device to the second memory device; and
17 storing a compressed image in a memory device.

1 58. The method of claim ⁴7 wherein the first memory device is a
2 RAM disk and the second memory device is a removable flash
3 memory.

1 59. 9. An apparatus for increasing a digital camera image capture rate,
2 comprising:
3 means for capturing an image upon detecting an image capture
4 request;
5 means for storing the image in a memory device;
6 means for repeating the capturing and storing if another image
7 capture request is detected; and
8 means for performing image processing and compression on the
9 image.

1 ~~10. The apparatus of claim 9 further comprising:~~

2 means for halting the image processing and compression means and
3 returning to the capturing means if another image capture
4 request is detected; and

5 means for resuming the image processing and compression means
6 after the capturing, storing and repeating means have been
7 ~~performed.~~

1 ~~11.~~⁷ The apparatus of claim ~~9~~⁶ further comprising:

2 means for deleting the image before the storing means if an image
3 deletion request is detected; and

4 means for deleting the image before the image processing and
5 compression means if the image deletion request is detected.

1 ~~12.~~⁸ The apparatus of claim ~~9~~⁶ wherein:

2 the image is a raw image;

3 the means for capturing further comprises means for placing the raw
4 image in a frame buffer;

5 the memory device is comprised of a first memory device and a
6 second memory device, and

7 the storing means further comprises:

8 (a) means for skipping to means (e) if the first memory device
9 does not have room for another raw image;

10 (b) means for copying the raw image from the frame buffer to
11 the first memory device;

12 (c) means for deleting the raw image from the frame buffer;

13 (d) means for returning to means for capturing if another raw
14 image capture request is detected;

15 (e) means for skipping to the image processing and compression
16 means if the second memory device does not have room
17 for another raw image;

18 (f) means for copying the raw image from the first memory
19 device to the second memory device;

20 (g) means for halting means (f) and returning to means (a) if the
21 image capture request is detected;

22 (h) means for deleting the raw image from the first memory
23 device; and

24 (i) means for returning to means (b) if another raw image can be
25 moved from the frame buffer to the first memory device.

1 9 13. The apparatus of claim 12⁸, wherein the image processing and
2 compression means further comprises:
3 means for processing the raw image from the frame buffer if the raw
4 image is located in the frame buffer;
5 means for processing the raw image from the first memory device if
6 the raw image is located in the first memory device;
7 means for processing the raw image from the second memory device if
8 the raw image is located in the second memory device;
9 means for halting the image processing and compression means and
10 returning to the means for capturing if the image capture
11 request is detected;
12 means for halting the image processing and compression means and
13 returning to means (b) if at least one more raw image can be
14 copied from the frame buffer to the first memory device;
15 means for halting the image processing and compression means and
16 returning to means (f) if at least one more raw image can be
17 copied from the first memory device to the second memory
18 device; and
19 means for storing a compressed image in a memory device.

1 1014. The apparatus of claim ⁹13 wherein the first memory device is a
2 RAM disk and the second memory device is a removable flash
3 memory.

Sub
a3/ 1 15. A computer readable medium comprising program instructions
2 for:
3 capturing an image upon detecting an image capture request;
4 storing the image in a memory device;
5 repeating the capturing and storing steps if another image capture
6 request is detected; and
7 performing image processing and compression on the image.

1 ~~16. The medium of claim 15 further comprising instructions for:~~
2 ~~halting the image processing and compression step and returning to~~
3 ~~the capturing step if another image capture request is detected;~~
4 ~~and~~
5 ~~resuming the image processing and compression step after the~~
6 ~~capturing, storing and repeating steps have been performed~~

1 ¹¹12. The medium of claim ~~15~~ further comprising instructions for:
2 deleting the image before the storing step if an image deletion request
3 is detected; and
4 deleting the image before the image processing and compression step
5 if the image deletion request is detected.

1 ¹³18. The medium of claim ¹¹~~15~~ wherein:
2 the image is a raw image;
3 the capturing step further comprises the step of placing the raw image
4 in a frame buffer;
5 the memory device is comprised of a first memory device and a
6 second memory device, and
7 the storing step further comprises the steps of:
8 (a) skipping to step (e) if the first memory device does not have
9 room for another raw image;
10 (b) copying the raw image from the frame buffer to the first
11 memory device;
12 (c) deleting the raw image from the frame buffer;
13 (d) returning to said capturing step if another raw image
14 capture request is detected;

(e) skipping to the image processing and compression step if the second memory device does not have room for another raw image;

(f) copying the raw image from the first memory device to the second memory device;

(g) halting step (f) and returning to said capturing step if the image capture request is detected;

(h) deleting the raw image from the first memory device; and

(i) returning to step (b) if another raw image can be moved from the frame buffer to the first memory device.

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The medium of claim ¹³~~18~~ wherein the image processing and compression step further comprises the steps of:

processing the raw image from the frame buffer if the raw image is located in the frame buffer;

processing the raw image from the first memory device if the raw image is located in the first memory device;

processing the raw image from the second memory device if the raw image is located in the second memory device;

9 halting the image processing and compression step and returning to
10 said capturing step if the image capture request is detected;
11 halting the image processing and compression step and returning to
12 step (b) if at least one more raw image can be copied from the
13 frame buffer to the first memory device;
14 halting the image processing and compression step and returning to
15 step (f) if at least one more raw image can be copied from the
16 first memory device to the second memory device; and
17 storing a compressed image in a memory device.

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~~20~~. The medium of claim ¹⁴~~19~~ wherein the first memory device is a
2 RAM disk and the second memory device is a removable flash
3 memory.

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